



CALIFORNIA DEPARTMENT OF
FOOD & AGRICULTURE

Karen Ross, Secretary

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Department of Pesticide Regulation

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SUBJECT: Number of farms using 1,3-dichloropropene

Background

1,3-dichloropropene (1,3-D) is a pre-plant soil fumigant used to control soil-borne pests such as nematodes, insects, and disease organisms in a variety of California crops. Human health risks associated with 1,3-D emissions resulted in restrictions on the use of 1,3-D in California beginning in the mid-1990s. It is a restricted use material that requires a permit from the agricultural commissioner. The Department of Pesticide Regulation (DPR) has been examining potential strategies to reduce acute and chronic human exposure to 1,3-D emissions from agricultural applications. The Office of Pesticide Consultation and Analysis (OPCA) completed an economic analysis showing that the proposed changes will increase the cost of pest management by \$1.02 to \$1.55 million per year depending on the year.

After reviewing the reports and addendum DPR asked OPCA to assist in estimating several additional parameters including: total businesses impacted, small businesses impacted, costs by annual vs perennial crop type, and recordkeeping costs of the tarpaulin repair plan.

Findings

Total Businesses Impacted

While it is not possible for CDFA to directly estimate the total number of businesses impacted, we can provide the number of farms that used 1,3-D, which is a reasonable approximation of impacted businesses. This estimate does not include the companies that apply 1,3-D. Between 996 and 1,124 separate farms used 1,3-D from 2017-2020 depending on the year (Table 1). 1,3-D is a pre-plant fumigant; farms planting perennials will only use it once in the lifetime of the orchard. This can lead to significant variability in both the number and type of farms that would be impacted each year.



Table 1: Number of farms using 1,3-D in California from 2017-2020

Year	Total farms using 1,3-D	Farms growing perennials using 1,3-D*	Farms growing annuals using 1,3-D*	Total number of farms in CA
2017	1,124	502	647	77,100
2018	1,103	530	593	69,410
2019	996	441	584	69,900
2020	1,021	473	575	69,600

*The same farm could be growing both annuals and perennials in the same year and using 1,3-D on both, therefore, the total of farms growing annuals plus farms growing perennials would be greater than the total number of farms using 1,3-D.

The total number of farms was pulled directly from CDFA statistics review reports from 2019, 2020, 2021 (<https://www.cdfa.ca.gov/Statistics/>). These numbers include all animal operations that would not have a need to apply fumigants. The number of farms using 1,3-D was derived directly from pesticide use data provided by DPR in 2017-2020.

Small Businesses Impacted

DPR requested that a business be identified as a small business if it meets all of the following criteria: (1) independently owned and operated, (2) not dominant in its field of operation, and (3) has fewer than 100 employees. Census data show that for California farms 53,000 are family/individually held, 8,000 are in partnership, and 6,100 are family held corporations. Individually held and family held operations are roughly 90% of farms. It is likely that some of the 8,000 held in partnership would also qualify. Some of the individually and family held farms could possibly be disqualified based on employee numbers but it is rare for farms to employ over 100 people full time. 2017 census data show that only 18,000 farms employ even one employee for over 150 days. It is also rare for a farm to be considered dominant in the field of operation. Overall, it is not possible to know the exact number of these farms that are considered small businesses by the definition requested. Using ownership data, however, we estimate that between 90% and 95% of California farms are small businesses.

Cost – Annuals vs. Perennials

The total estimated cost of \$1.02 to \$1.55 million per year depending on the year can be broken into the estimate cost for annual crops and perennial crops separately (Table 2).

Table 2: Cost separated by annuals and perennials

Year	Total cost	
	Annuals	Perennials
2017	1,485,745	411,541
2018	1,506,713	489,378
2019	910,974	367,801
2020	1,345,271	384,718

Recordkeeping Costs of Tarpaulin Repair Plan

Section 6448.2 (a)(4) states that:

- (4) A tarpaulin plan that includes the following elements is required:
 - (A) identification of the tarpaulin, including brand name, lot number, thickness, manufacturer, batch number, and part number;
 - (B) a schedule for checking tarpaulins for damage, tears, and other problems;
 - (C) the parties responsible for checking and repairing tarpaulins;
 - (D) the minimum size of damage that will be repaired;
 - (E) the factors used to determine when tarpaulin repair will be conducted;
 - (F) the equipment/methods used to cut or perforate tarpaulins;
 - (G) the target dates for cutting/perforating tarpaulins; and
 - (H) the target dates for removing tarpaulins.

Based on that information, we estimate that the administrative time to complete and maintain these plans is roughly similar to completing and maintaining a fumigant management plan which as indicated in Table 3.



Category	Activity	Frequency	Hours	Cost ¹ (\$46.48/hr)
Total Burden and Cost Per Initial and Subsequent Application				
		Initial Application	14.90	\$692.55
		Subsequent Application	3.90	\$181.27

Table 3: Cost for User Application Activities per Soil Fumigant Application, By Activity*

* <https://omb.report/omb/2070-0197>

Tarpaulin management plans are already required for applications of products that contain chloropicrin. Table 4 gives the number of fields in 2017 to 2020 that used or would likely have used tarpaulins under the proposed regulation. This is an overestimate of the number that would be making new plans because applications in VOC nonattainment areas from May-October are already required to have them. Additionally, because this is a new requirement, we assume that all applications would be an initial application. This is also an overestimate as some growers will have subsequent applications that require less time.

Table 4: Applications Potentially Requiring Tarpaulin Plans per Year

Year	Number of applications	Total cost
2017	19	\$13,158
2018	14	\$9,696
2019	20	\$13,851
2020	16	\$11,081

If each application requires 14.9 hours (Table 3), costing \$692.55 in labor (Table 3), then the estimated cost increase for the tarpaulin management plan requirement is estimated to be between \$9,696 and \$13,851 per year depending on the year (Table 4).

¹ Cost is equal to the hours times the wage rate (\$/hr).